**Mystery Powders**

**Activity Objectives**

During this activity you should be able to:

* Test small amounts of known white powders to determine how to perform a positive test for that specific white powder
* Identify the different powders in a "mystery mixture" which contains at least two known powders

**Procedure**

**Test #1**

* Place a small amount of each powder on a square of black paper and observe the particles with a hand lens or microscope.
* Record your observations in the table.
* Please dispose of the powders in the garbage by gently tapping the paper over the garbage can. Return the black paper to the appropriate location in the tray.

**Test #2**

* Place a small amount of each powder on a square of tinfoil. Use a hot plate on medium to heat your powders. Be very careful not to burn yourself.
* Record your observations in the table.
* Please turn off the hot plate when finished, allow the foil and powders to cool, and dispose of the tinfoil and powders in the garbage.

**Test #3**

* Place a small amount of each powder in a separate well on a spot plate.
* Add a drop of vinegar to each powder.
* Record your observations in the table.
* Clean up the spot plate.

**Test #4**

* Place a small amount of each powder in a separate well on a spot plate.
* Add a drop of Iodine solution to each powder.
* Record your observations in the table.
* Clean up the spot plate.

**Test #5**

* Place a small amount of each powder in a separate well on a spot plate.
* Add a drop of water to each powder.
* Record your observations in the table.
* Clean up the spot plate.

**Part 2 - Identify an Unknown Mixture of White Powders**

* Take one unknown mixture from the tray and record the number of the mixture. Each mixture contains two or three of the known powders in different combinations.
* Your task it to identify which powders are present in your unknown mixture.
* You have completed each procedure at least once in Part 1 of the lab. Therefore, by repeating the procedures, you can determine the contents of your unknown mixture.
* In the table below summarize your observations and conclusions.

**Reflections on the Activity**

1. Describe a positive test for each of the unknown white powders.
2. Explain how you determined the composition of your unknown mixture.
3. Give an example of how the procedures you used today could be used to collect evidence and analyze evidence at a crime scene.